

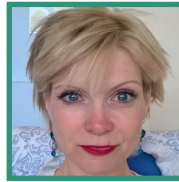
An update on e-Bug progress in France

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Students' awareness of the microbial world, including increasing antimicrobial resistance (AMR), is limited in Europe^{1,2}. An educational programme aiming to improve European children's knowledge of micro-organisms, transmission, prevention and treatment of infection and prudent antibiotic use was initiated by Public Health England, UK. This project, called e-Bug³, was supported by the European Union (DG Sanco) from 2006 to 2009, by the participating countries, (currently 27) and the European Centre for Disease Control (ECDC)⁴.

The resources initially addressed junior (ages 7-11) and senior (ages 11-15)⁵ students and were extended in 2017 to include young adults (ages 15-18) focusing more specifically on antibiotics and vaccinations^{6,7}. Needs assessments^{2,6,7} were conducted, exploring curriculum, public health campaigns and conducting qualitative research among teachers and students, followed by quantitative and qualitative evaluations⁸.

The resources are considered evidence-based by the National Institute for Health Care and Excellence in 2017, (NICE guideline on antimicrobial stewardship)⁹.

France has been actively involved in this project since its initiation. The resources were translated and adapted to the national cultural context, curriculum and teaching conditions. In coordination with the Education and Health ministries¹⁰, over 170,000 educational packs were printed and disseminated to all 52,900 junior and 7,100 senior schools in France¹¹ (2009, 2011, 2013) by the National Institute for Health Education, potentially reaching over 10 million pupils¹². These downloadable, free, web-based³ resources include lesson plans for teachers, student worksheets, activities, animations, games and quizzes, designed to make learning interactive and fun¹³.

France has broadened its resources to include other relevant themes: microbiota, animal health and the One Health concept. This involved the ministries of agriculture and of the environment, as well as the national veterinary school.

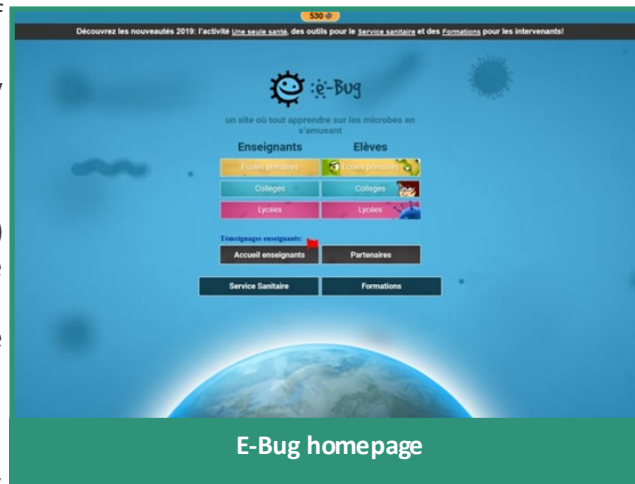
In addition, massive open online courses (MOOCs) were developed and evaluated (2018) to meet teachers' needs⁶, available at the Ministry of Education Continuous professional training platform and on the e-Bug web site.

Furthermore, since 2018, French healthcare students must take part in health

promotion activities for the community. The French e-Bug coordination team was asked to develop educational material, and specific resources have been available on the e-Bug website since 2019.

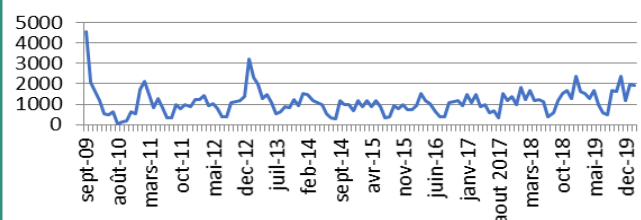
The French e-Bug team also provides a discussion-based resource on prevention of AMR, targeting educators involved in the civilian National Service, now required for all 15-17 year-olds.

The French e-Bug project has been coordinated by the Nice University Hospital Public Health Department since 2006. French partners have actively contributed



E-Bug homepage

Trends of visits to French e-Bug website 2009-2020



Use of the French e-Bug website is steadily increasing—usage is up by 17% in 2019 compared to 2018.

funding, scientific review, dissemination and promotion. Such wide institutional partnerships and enthusiastic support were very helpful in France for successful implementation.

That such a European programme has lasted so long and involved so many participants provides evidence of its recognition and success as a unique project designed for its particular target groups, relating both to education and public health while being creative and attractive for educators and students, and resulting in proven knowledge enhancement¹¹.

References

1. Lecky DM *et al.* What are school children in Europe being taught about hygiene and antibiotic use? *J Antimicrob Chemother.* 2011;66 Suppl 5:v13-21
2. Hawking MK *et al.* Attitudes and behaviours of adolescents towards antibiotics and self-care for respiratory tract infections: a qualitative study. *BMJ Open.* 2017;7:e015308
3. [e-BUG. \[ONLINE\]](#)
4. McNulty CA *et al.* Overview of e-Bug: an antibiotic and hygiene educational resource for schools. *J Antimicrob Chemother.* 2011;66 Suppl 5:v3-12
5. Lecky DM *et al.* Development of an educational resource on microbes, hygiene and prudent antibiotic use for junior and senior school children. *J Antimicrob Chemother.* 2011;66 Suppl 5:v23-31
6. Caroline Darnaud. Exploration des attitudes, comportements, connaissances des adolescents entre 15 et 18 ans concernant les antibiotiques et les vaccinations en France selon les enseignants et détermination des besoins des enseignants en matière d'outils pour l'éducation à la santé: étude qualitative dans le cadre du projet Européen e-Bug. *Médecine humaine et pathologie.* 2014.
7. Touboul Lundgren P *et al.* [How to raise awareness about antibiotics and vaccination among French teenagers?] [Article in English, French] *Sante Publique.* 2017;29:167-177
8. Lecky DM *et al.* Evaluation of e-Bug, an educational pack, teaching about prudent antibiotic use and hygiene, in the Czech Republic, France and England. *J Antimicrob Chemother.* 2010;65:2674-84
9. Endorsed resource – e-Bug educational pack (antibiotics) for children and young people. NICE Guidelines. 2017
10. e-Bug is included in the French National action plans to combat antibiotic resistance [ONLINE]
11. L'éducation nationale en chiffres 2019
12. Touboul P *et al.* The e-Bug project in France. *J Antimicrob Chemother.* 2011;66 Suppl 5:v67-70
13. Farrell D *et al.* Developing e-Bug web games to teach microbiology. *J Antimicrob Chemother.* 2011;66 Suppl 5:v33-8

A selection of e-Bug resources from interactive quizzes, to games, to animations to home projects

Below are 6 projects you can do at home, click below for some printable instructions.

